

United States Court of Appeals for the Federal Circuit

04-1605

RESEARCH PLASTICS, INC.,

Plaintiff-Appellant,

v.

FEDERAL PACKAGING CORP.,

Defendant-Appellee.

Theodore W. Olds, Carlson, Gaskey & Olds, P.C., of Birmingham, Michigan, argued for plaintiff-appellant. With him on the brief was Anthony P. Cho.

Richard W. Hoffmann, Warn, Burgess & Hoffmann, P.C., of Auburn Hills, Michigan, argued for defendant-appellee.

Appealed from: United States District Court for the Eastern District of Michigan

Senior Judge Avern Cohn

United States Court of Appeals for the Federal Circuit

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RESEARCH PLASTICS, INC.,

Plaintiff-Appellant,

v.

FEDERAL PACKAGING CORP.,

Defendant-Appellee.

DECIDED: August 18, 2005

Before NEWMAN, BRYSON, and GAJARSA, Circuit Judges.

GAJARSA, Circuit Judge.

Research Plastics, Inc. ("Research") appeals from the final judgment of the United States District Court for the Eastern District of Michigan granting summary judgment of non-infringement of United States Patent No. 5,628,433 (the "'433 patent") to defendant Federal Packaging Corp. ("Federal").¹ Research Plastics, Inc. v. Fed. Packaging Corp., No. 98-CV-73544, Memorandum and Order on Infringement (May 13, 2003) ("Infringement Order"). Because we find that the district court erred in its

¹ The district court also denied summary judgment with respect to United States Patent No. 5,749,499 (the "'499 patent"). The parties stipulated to the dismissal of all claims regarding the '499 patent, and thus those claims are not before this court.

construction of the claim term "rear end," we vacate and remand for further consideration consistent with this opinion.

BACKGROUND

A. The Patents and Prosecution History

Frederick Binder is the inventor of the '433 patent, which he assigned to Research, and which relates to caulking tubes.² The '433 patent describes the placement of ribs on the interior surface of a tube. The addition of these ribs permits air to escape when a plunger is inserted into the bottom of a tube filled with fluent material (such as caulk or another adhesive). When a tube lacking ribs is filled with fluent material, residual air becomes trapped inside the tube. This is problematic because the air prevents a tight seal from forming between the plunger and the material. Consequently, when the trapped air is eventually expelled through the nozzle along with the material extruded from the tube, the air causes the material to flow unevenly. The trapped air may also cause the plunger to leak fluent material. The prior art solved this problem by introducing what is known as an air tap or a bleed wire. A removable bleed wire was placed between a plunger and a tube to create a temporary vent that allowed the air to escape when the plunger was inserted. This solution proved sub-optimal because it was "unduly complicated."

The '433 patent is comprised of two independent claims: claims 1 and 10. Research asserted claim 10 of the '433 patent against Federal. Claim 10 reads:

A tube for receiving fluent material comprising:

² For the sake of simplicity, the inventor and all assignees of the '433 patent shall hereinafter be referred to as "Research."

a hollow tube body being generally cylindrical and extending from a rear end to a nozzle end, a plurality of ribs extending radially inwardly from an inner peripheral wall of said tube, said ribs extending radially inwardly for a depth that is less than 0.5% of a diameter of said tube; and

a plunger having an outer peripheral surface closely matched to said inner peripheral surface of said tube, such that when said plunger is received within said tub [sic], air spaces are formed between said plunger and said tube by said ribs, said ribs each occupying an area that is less than 0.5% of the area of said tube, and said ribs extending to said rear end of said hollow tube body.

'433 patent, col. 4, ll. 40-53 (emphases added). It is the construction of the underlined claim term, "rear end," that is at issue in this appeal. Claim 1 also includes references to the "rear end" of the tube. Claim 1 reads:

A tube for receiving a fluent material comprising:

a tube body being elongated and extending from a rear end to a forward nozzle end;

a plunger member received within said tube body adjacent said rear end; and

said plunger body having an outer peripheral surface closely matched to an inner peripheral surface of said hollow tube body, air spaces being formed between said outer peripheral surface of said plunger and said inner peripheral surface of said tube body, said air spaces defined adjacent said rear end of said tube body by air space defining members extending to said rear end, said tube body having a diameter, said air space defining members having a radial distance that is less than 1.0% of said diameter of said tube, and each of said air space defining members occupying an area that is less than 0.5% of the area of the interior of said tube.

'433 patent, col. 4, ll. 40-53 (emphases added).

The specification uses the disputed claim term "rear end" in the following manner:

In the prior art, fluent materials, such as caulking, adhesives, or other materials, are typically stored in tubes that are generally cylindrical and

extend from a rear end to a front nozzle. A plunger is received within the rear end and advanced by a gun to dispense the material from the nozzle.

'433 patent, col. 1, ll. 9-12 (emphases added). The description of the preferred embodiment states that "a plunger (32) is received within the rear end (33) of the tube."

'433 patent, col. 2, ll. 46-47 (emphasis added). The patent indicates that Figure 2 in the specification depicts this preferred embodiment. In Figure 2, the rear end, indicated by the number 33, is marked as the rear edge of the tube.

The '433 patent was initially rejected as obvious over United States Patent No. 4,852,772 ("Ennis patent"). The Ennis patent claims the use of ridges similar to the ribs in the Research patent, except that the Ennis ridges are positioned near the nozzle end of the tube. The Ennis patent teaches filling the tube through its nozzle, thus using the ridges to burp the tube during filling.³ Filling commences with the plunger fully depressed. The fluent material introduced through the nozzle pushes the plunger rearward toward the open end of the tube. Because burping is accomplished at the beginning of the filling process, negating the need for air passages after the initial burping, the ridges in the Ennis tube extend back only part of the length of the tube.

In response to the rejection over Ennis, Research amended the claims by adding the following language to claim 10: "said ribs each occupying an area that is less than 0.5% of the area of said tube, and said ribs extending to said rear end of said hollow tube body." Claim 1 was similarly amended. In the written explanation of these amendments, Research stated:

As agreed, the ENNIS patent only defines ribs formed near the nozzle end of the tube. Applicant's invention includes members that define spaces,

³ The process of permitting trapped air to escape is sometimes referred to as "burping the tube."

and in particular ribs, that extend to the rear end of the tube. In this way, the air spaces are provided adjacent to the rear end of the tube such that the air spaces are provided when the tube is full.

The examiner concluded that the new limitations distinguished the Research invention from the teachings of the Ennis patent. The '433 patent issued on May 13, 1997.

B. The Accused Products

Federal manufactures and sells various plastic caulking tubes. Originally, Federal made its tubes without ribs, relying instead upon the bleed wire technique for burping the tube. Sometime prior to January 8, 1997, Federal produced samples of caulking tubes with ribs. Federal subsequently produced and sold these tubes, which are referred to in this appeal as the "old style" tubes.

The old style tubes consist of a cylindrical tube body with a nozzle attached to the front. The rear edge of the tube's interior wall tapers toward the outer wall forming a beveled edge. The exterior wall is longer than the interior wall, and so the diameter of the tube widens towards the back edge. This tapered portion of the tube is referred to as the chamfer angle, and helps to guide the plunger into the tube. In the old style tube, ribs project from the inner wall of the tube body starting at the rearmost edge of the tube's interior wall—the inner edge of the chamfer angle—and extending approximately one fifth of the length of the tube.⁴ Federal ultimately manufactured over 10 million old style tubes.

Federal subsequently modified the design of its tubes by shortening the ribs and placing them further inside the tube. In contrast to the old style tube, the rearmost

⁴ The exact length of the ribs in the old style tube is not described and is immaterial to the disposition of this case.

points of the ribs on the modified tube are located some distance from the rear edge of the tube's interior wall and the chamfer angle, but still in the rear half of the tube, well away from the nozzle. Federal is currently producing and selling these tubes, referred to in this appeal as the "new style" tubes.

C. The District Court Proceedings

On August 14, 1998, Research brought suit against Federal, alleging infringement of its '433 and '499 patents. The district court held a Markman hearing and issued a Memorandum and Order on Claim Construction ("Claim Construction Order"), Research Plastics, Inc. v. Fed. Packaging Corp., No. 98-CV-73544 (Dec. 19, 2001), in which it adopted Federal's proposed claim construction, stating: "[E]nd' as used in the patents, is constructed to mean a fixed point, or an edge on the tube. Thus, "rear end" means the outermost edge of the tube and "nozzle end" means the point on the forward edge of the tube body." Claim Construction Order, slip op. 12. The district court noted that the language in claim 1 of the '433 patent implied a specific reference point instead of an area or length and that the specification also implies a point on the tube, not an area. The district court further noted that the diagrams depicting the element described as the "rear end" point to the edge of the tube. The district court concluded that the end referred to the edge of the tube as opposed to merely the rear portion of the tube.

Following the district court's claim construction, the parties filed cross motions for summary judgment on theories of literal infringement and infringement by the doctrine of equivalents. The district court held a hearing on these motions and examined the claims in view of both the old style and the new style tubes. Based on its claim construction, the district court granted Federal summary judgment of non-infringement

of the '433 patent. In so doing, the district court held that no reasonable jury could find that the ribs of either accused product extend to the rear edge of the tube. The district court further determined that Research was barred from establishing infringement under the doctrine of equivalents by prosecution history estoppel. Research appeals these judgments to this court.

We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Standard of Review

This court reviews grants of summary judgment de novo. Syntex (U.S.A.) LLC v. Apotex, Inc., 407 F.3d 1371, 1377 (Fed. Cir. 2005). Summary judgment should be granted when no genuine issues of material fact exist, and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c); Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 247-48 (1986). Determining patent infringement is a two-step process: (1) the court must interpret the claim, and then (2) it must compare the allegedly infringing device against the properly construed claim. See Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). The first step, claim construction, is a matter of law and is thus reviewed de novo. Id. at 1456. The second step usually presents a factual question that we review for clear error. Bai v. L & L Wings, Inc., 160 F.3d 1350, 1353 (Fed. Cir. 1998). However, where the factual inferences are material to the grant of a summary judgment, we review them to ascertain whether there is a genuine issue of material fact. Lemelson v. TRW, Inc., 760 F.2d 1254, 1260 (Fed. Cir. 1985). Whether prosecution history estoppel acts as a limit on the doctrine of

equivalents is a question of law, which we review de novo. Rhodia Chimie v. PPG Indus., 402 F.3d 1371, 1376 (Fed. Cir. 2005).

B. Claim Construction

Claim construction begins with the language of the claims. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). The words of a claim are generally to be accorded their "ordinary and customary meaning," id. at 1582, which is "the meaning that term would have to a person of ordinary skill in the art in question at the time of invention," Phillips v. AWH Corp., Nos. 03-1269, -1286, 2005 U.S. App. LEXIS 13954, at *22 (Fed. Cir. July 12, 2005) (en banc). It is presumed that the person of ordinary skill in the art read the claim in the context of the entire patent, including the specification, not confining his understanding to the claim at issue. Id. at *24; see also V-Formation, Inc. v. Bennetton Group SpA, 401 F.3d 1307, 1310 (Fed. Cir. 2005) (noting that the intrinsic record "usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention"). Further, claim terms are presumed to be used consistently throughout the patent, such that the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Phillips, 2005 U.S. App. LEXIS 13954, at *28; see also Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed. Cir. 2001).

As the court summarized in Renishaw,

[u]ltimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (citations omitted). In furtherance of this full understanding, an invention must be construed "with reference to the file wrapper of prosecution history in the Patent Office." Graham v. John Deere Co., 338 U.S. 1, 33 (1996); Phillips, 2005 U.S. App. LEXIS 13954, at *35. "The purpose of consulting the prosecution history in construing a claim is to 'exclude any interpretation that was disclaimed during prosecution.'" Rhodia Chimie, 402 F.3d at 1384 (quoting ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1580 (Fed. Cir. 1988)). Thus, the prosecution history can reveal instances where the inventor limited the invention in the course of prosecution and thus narrowed the scope of the claim. Phillips, 2005 U.S. App. LEXIS 13954, at *36.

The district court defined the claim term "rear end" as referring to the "outermost edge of the tube." Claim Construction Order, slip op. 12. Although the district court properly construed the term "rear end" to mean the point forming the edge of the tube body rather than merely the rearward portion of the tube, it erred to the extent that it treated the chamfer angle as being inside the rear end of the tube. Properly construed, the claim term "rear end" refers to the entire rear edge of the tube, including the point at the rear end on the inside of the tube, the point on the rear end at the outside of the tube, and the area in between. Specifically, the "rear end" does not just refer to the point on the outside of the rear edge. The district court erred by selecting the outer edge as the end point of the tube, thereby impermissibly limiting the scope of the claim. Both the inside and the outside edges are part of the rear end of the tube.

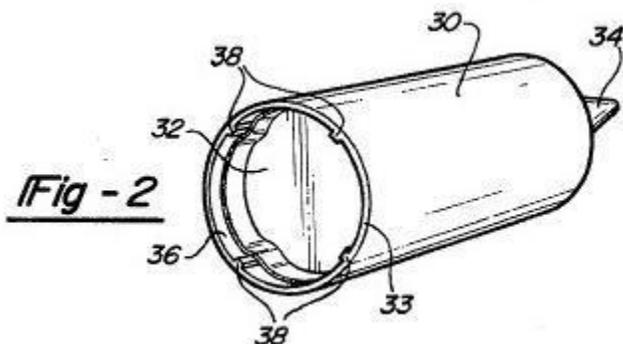
The language of the claims supports this construction. Claim 10 of the '433 patent uses the term twice. It claims "[a] hollow tube body being generally cylindrical

and extending from a rear end to a nozzle end," '433 patent, col. 4, ll. 41-42 (emphasis added), and "ribs extending to said rear end of said hollow tube body," id., col. 4, ll. 52-53 (emphasis added). In the context of the claim, "rear end" clearly refers to a point defined by the rear edge, such that the tube body extends between two points: the rear end and the nozzle end. Research argues that the claim term "rear end" should be construed as the rear portion of the tube. However, it would be illogical to describe a tube that extends to two regions in the manner that Research suggests, since this would leave the extension of the tube ill-defined. Claim 10 also describes the ribs as "extending to said rear end," which clearly indicates that the rear end is conceived of as a point capable of being attained, and not as a region.

Claim 1 of the '433 patent uses the term "rear end" in the same manner as claim 10. It claims "[a] tube body being elongated and extending from a rear end to a forward nozzle end." '433 patent, col. 3, ll. 66-67 (emphasis added). Claim 1 describes the positioning of air spaces "adjacent said rear end of said tube body by air space defining members extending to said rear end." '433 patent, col. 4, ll. 7-9 (emphases added).

The written description further supports construing "rear end" as referring to the rear edge of the tube. The written description uses the term "rear end" in a manner consistent with its usage in the claim terms. It discusses prior art tubes as being "generally cylindrical and extend[ing] from a rear end to a front nozzle." '433 patent, col. 1, ll.11-12. Research contends that the written description's statement that the "plunger is received within the rear end" precludes defining the rear end as a point. '433 patent, col.1, l.12. However, this argument is not persuasive. It is not incongruous to treat the use of "rear end" in this portion of the written description as meaning a point on the

tube, particularly in light of the designation of the "rear end" as the end point of the tube in the preferred embodiment. Figure 2, shown below, depicts the preferred embodiment. The written description specifies that the rear edge, labeled 33, is the "rear end" of the tube.



The prosecution history also provides substantial support for construing the claim term "rear end" as the point defined by the rear edge of the tube. During prosecution, the '433 patent was rejected as anticipated by the Ennis patent. The Ennis patent claimed a tube with channels or ribs located at the nozzle end of the tube. In overcoming the examiner's rejection, Research distinguished Ennis by claiming ribs that "extend to the rear end of the tube." In thus amending its claim, Research affirmatively disclaimed, at a minimum, tubes with channels immediately adjacent to the nozzle. However, Research further stated to the patent examiner that the amendments made to overcome the rejection over Ennis limited the claims to cover tubes in which "the air spaces are provided adjacent the rear end of the tube such that the air spaces are provided when the tube is full." If the term "rear end" was construed as an undefined area, and the ribs were positioned adjacent to this area, further inside the tube, air spaces would not be provided when the tube was full. Rather, spaces would only be

provided when the tube was partially full. Such a construction would not avoid the prior art that Research distinguished. Positioning ribs of unlimited length adjacent to a rear region could feasibly entail placing the ribs in the forward portion of the tube, near the nozzle. Such a construction would negate the clear disclaimer of claim scope made during the prosecution of the '433 patent. See Phillips, 2005 U.S. App. LEXIS 13954, at *36; Rhodia Chimie, 402 F.3d at 1384. Consequently, Research's amendment must be seen as an affirmative disclaimer of ribs not extending to the rear edge of the tube.

For the foregoing reasons, we construe the claim term "rear end" to mean "a reference point defined by the rear edge of the tube."

C. Literal Infringement

Literal infringement requires that the accused device embody each limitation of the asserted claim. Southwall Tech., Inc. v. Cardinal I.G. Co., 54 F.3d 1570, 1575 (Fed. Cir. 1995). The absence of any limitation of the asserted claim defeats literal infringement. Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1535 (Fed. Cir. 1991). Although claim 10 of the '433 patent contains a number of limitations, the sole limitation at issue is the location of the ribs. Namely, the parties dispute whether the ribs in the accused products extend to the rear end of the tube bodies.

Since the district court erred in construing the claim term "rear end," the district court's determination of infringement must be reconsidered. Playtex Prods. v. P&G, 400 F.3d 901, 910 (Fed. Cir. 2005). As a matter of claim construction, the district court held that the "rear end" meant the edge of the tube beyond the chamfer area, in this case the outer edge of the tube, and that "the chamfer angle is necessarily included in the tube body because it is inside of the rear end." Infringement Order, slip. op. 13. Because

the ribs in the old style tube did not extend across the chamfer angle region, the district court found that a necessary limitation was absent from the old style tube and, consequently, that there was no infringement. Since we construe the claim term "rear end" to mean the point defined by the rear edge of the tube, not just a point on the outside rear edge or the inside rear edge of the chamfer angle, the district court's analysis no longer holds. The district court on remand will need to apply the revised claim construction outlined in this opinion to both the old style and new style tubes to determine infringement.

D. Infringement Under the Doctrine of Equivalents

While the district court's claim construction error presumptively affects the disposition of Research's doctrine of equivalents infringement analysis, we note that the district court correctly concluded that Research is precluded from expanding the scope of the '433 patent to cover equivalents of the location of the ribs under the Festo doctrine.

According to the Supreme Court, "a narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel." Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 736 (2002). A narrowing amendment made to avoid prior art creates a presumption that the patentee surrendered the territory between the original claims and the amended claims. Id. at 741. The patentee may rebut that presumption by showing that the alleged equivalent (1) could not reasonably have been described at the time the amendment was made, (2) was tangential to the purpose of the amendment, or (3) was not foreseeable (and thus not claimable) at the time of the amendment. Id. at 740-41. This court has acknowledged and applied these

criteria to rebut the presumption. Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 344 F.3d 1359 (Fed. Cir. 2003) (en banc), on remand from 535 U.S. 722 (2002).

Research amended the claims of the '433 patent in response to the patent examiner's rejection based on the placement of the ribs within the tube. Research was forced to disclaim ribs which were positioned adjacent to the nozzle end of the tube. In so doing, Research chose to position the ribs of its tube "extending to said rear end," thereby narrowing the scope of its claim.

None of the rebutting criteria apply in this case. First, Research could have claimed ribs placed in the region between the nozzle end and the rear end of the tube, so long as it disclaimed the location adjacent to the nozzle. There would have been no difficulty in describing ribs placed rearward from the nozzle end, yet not extending completely to the rear edge. Id. at 1370 (holding that the category of exceptions to the Festo presumption based on an inability to describe the equivalent at the time of amendment is a narrow one). Second, contrary to Research's argument, the alleged equivalent--ribs extending to a point short of the rear edge of the tube--is not tangential to the purpose of the amendment, because the purpose of the amendment was to avoid rejection based on rib placement. Id. at 1369 (holding that tangentialness depends on the patentee's objectively apparent reason for the amendment). Finally, it was foreseeable at the time of issuance of the patent that rib placement was a point of differentiation, as evidenced by Research's distinguishing the invention of the '433 patent from Ennis on those grounds. Id. (holding that equivalents known in the prior art at the time of amendment are certainly foreseeable). Because Research has not

rebutted the presumption, it is precluded from asserting infringement of the rib placement limitation of the '433 patent under the doctrine of equivalents.

CONCLUSION

Because the district court erred in construing "rear end" to mean the outermost point of the rear edge of the tube, we vacate and remand the summary judgment of non-infringement of the old style and new style tubes for further adjudication consistent with this opinion. Accordingly, the judgment of the district court is

VACATED and REMANDED.

COSTS

Each party shall bear its own costs.